SUBSTITUTE SHEET (RULE 26)

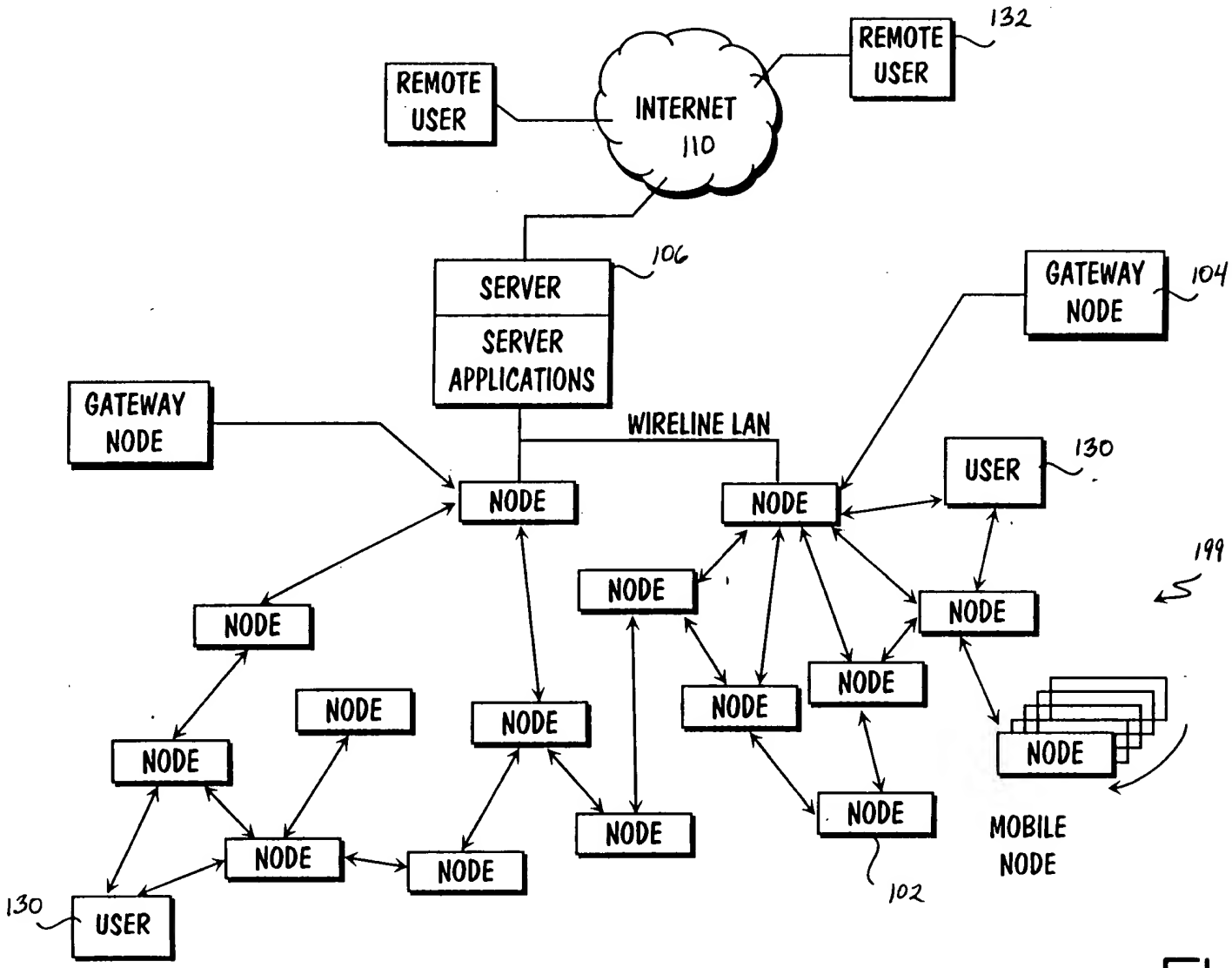


FIG. 1

DRAFT - DO NOT COPY

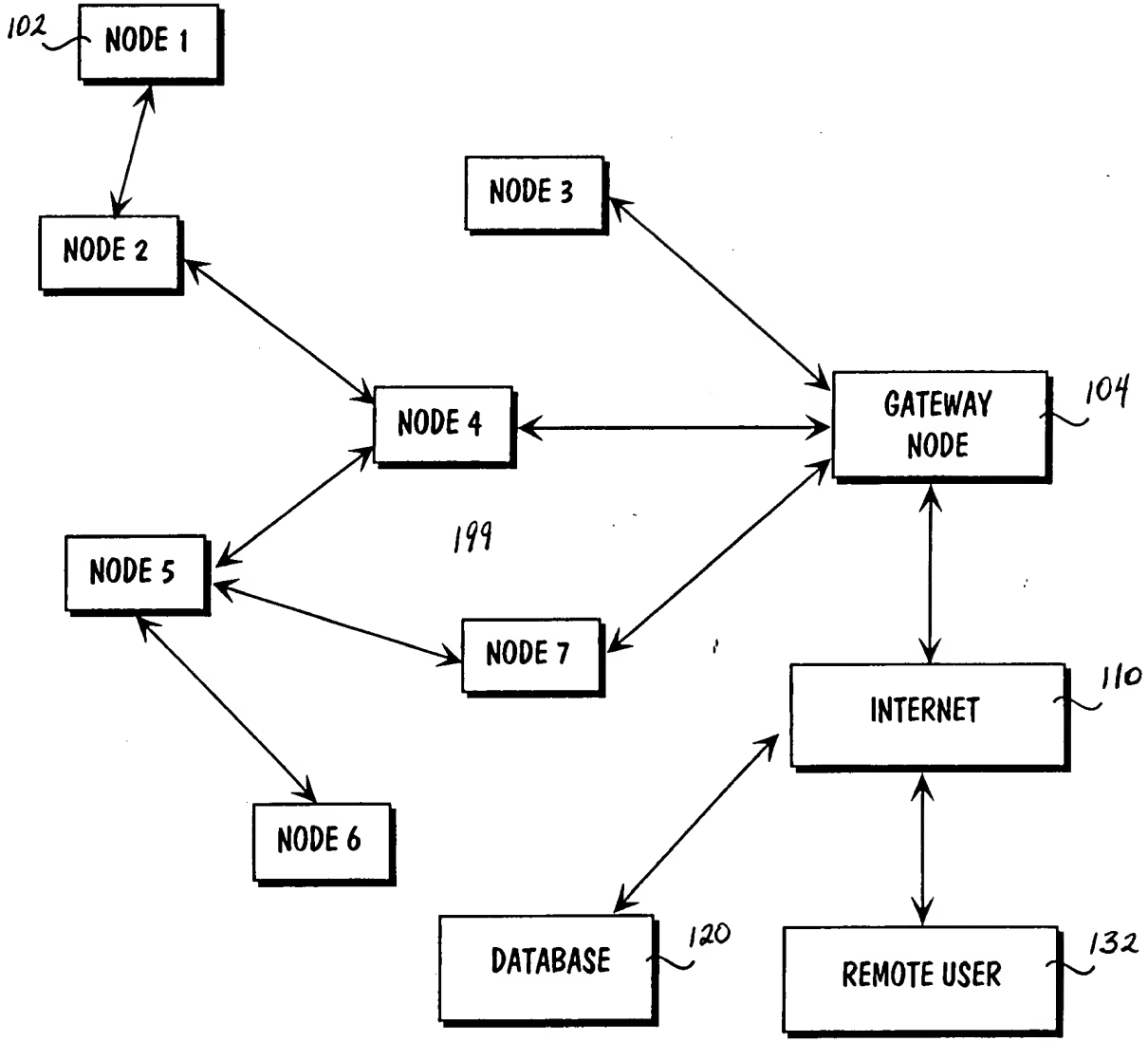


FIG. 2

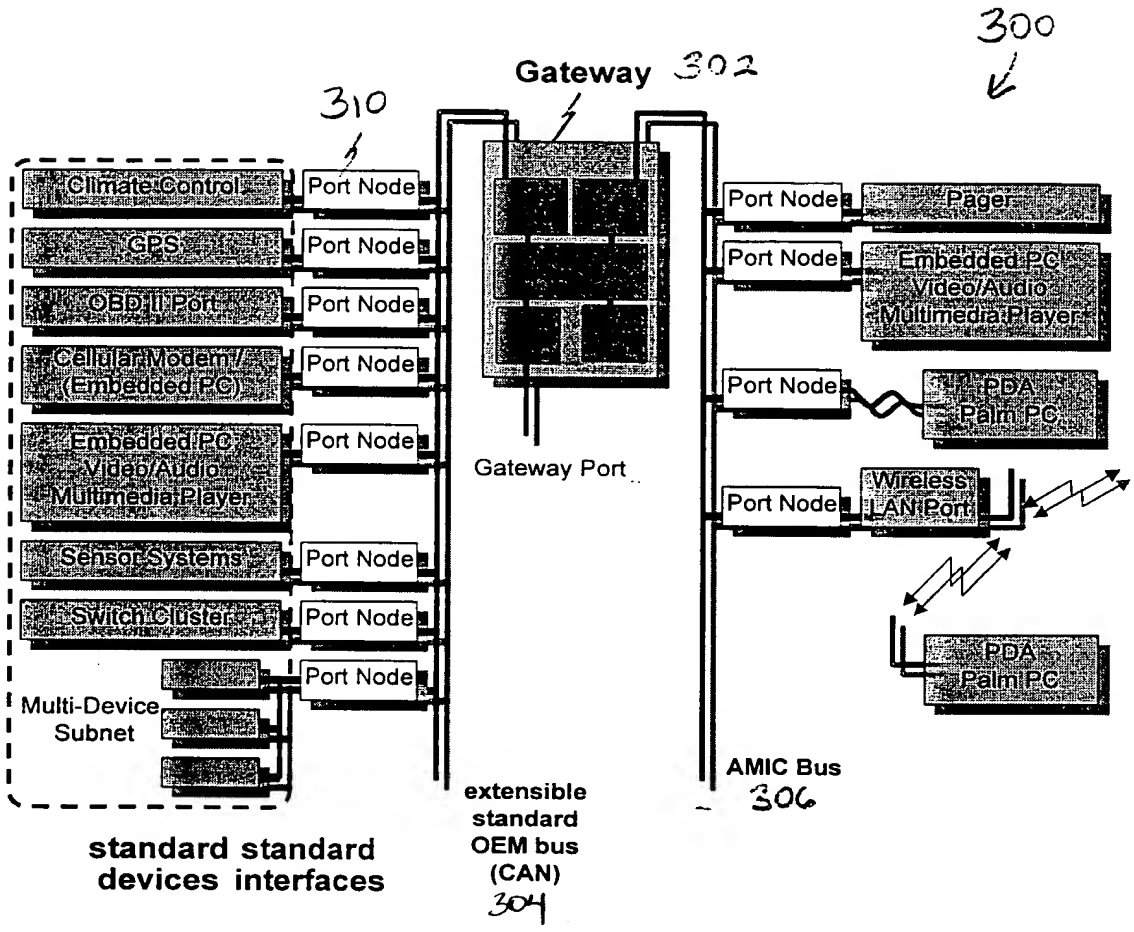

300
Gateway 302
310
Climate Control
GPS
OBD II Port
Cellular Modem / (Embedded PC)
Embedded PC Video/Audio Multimedia Player
Sensor Systems
Switch Cluster
Multi-Device Subnet
Port Node
Gateway Port
Pager
Embedded PC Video/Audio Multimedia Player
PDA Palm PC
Wireless LAN Port
PDA Palm PC
AMIC Bus
306
extensible standard OEM bus (CAN)
304
standard devices
standard interfaces

FIGURE 3

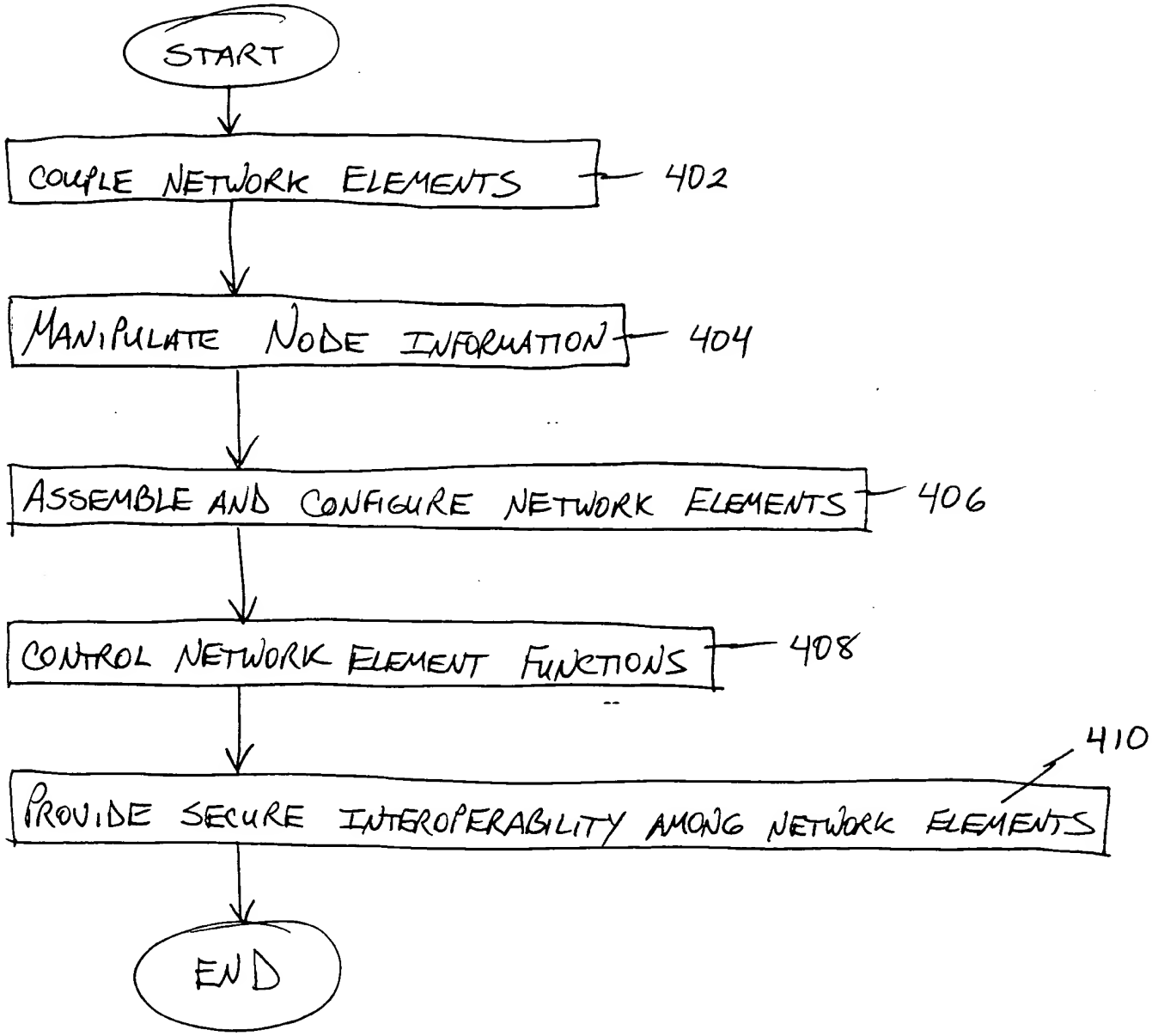

START
COUPLE NETWORK ELEMENTS
402
MANIPULATE NODE INFORMATION
404
ASSEMBLE AND CONFIGURE NETWORK ELEMENTS
406
CONTROL NETWORK ELEMENT FUNCTIONS
408
410
PROVIDE SECURE INTEROPERABILITY AMONG NETWORK ELEMENTS
END

FIGURE 4

Figure 5

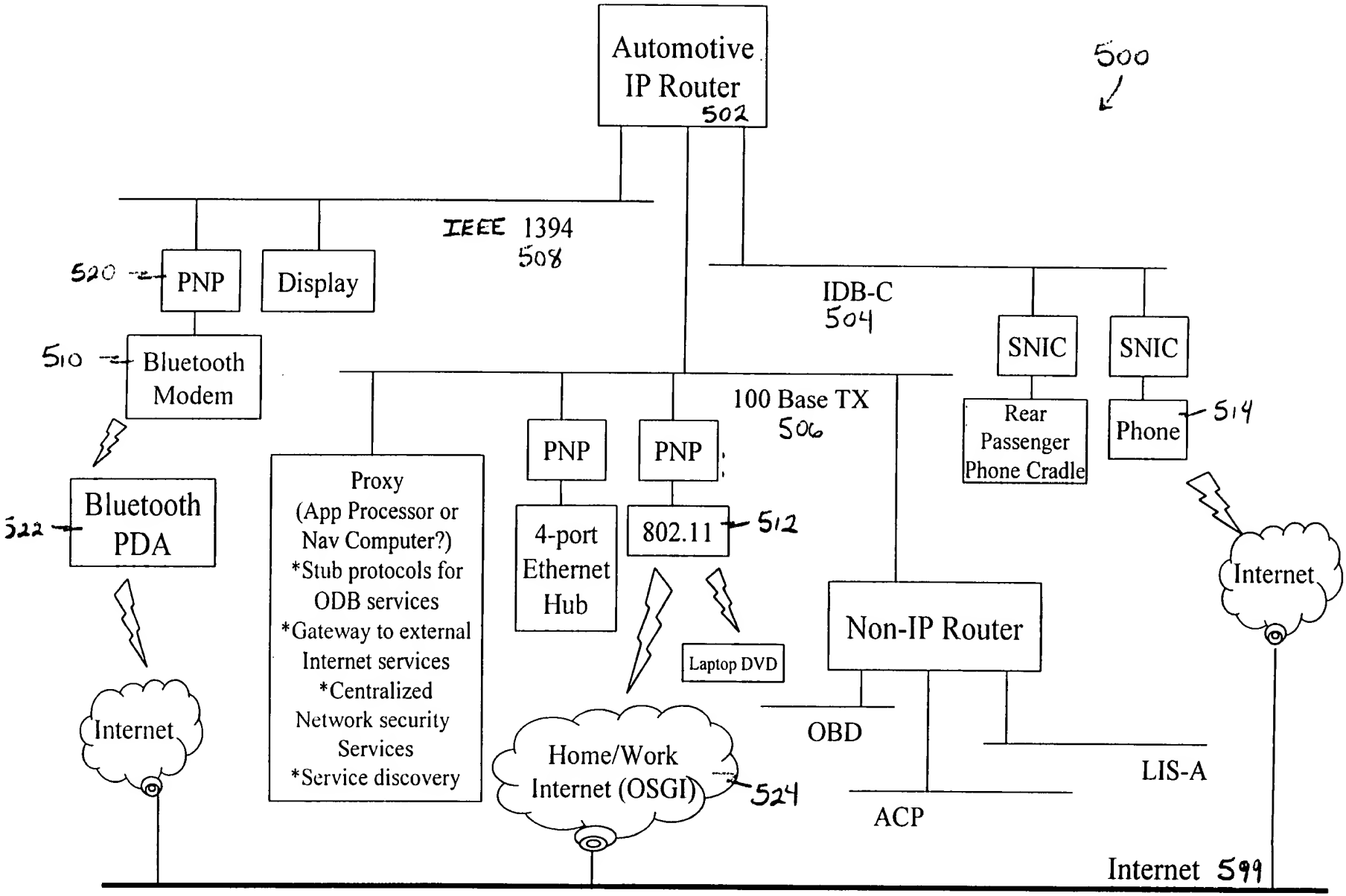

Automotive IP Router
502
500
IEEE 1394
508
520
PNP
Display
IDB-C
504
SNIC
SNIC
510
Bluetooth Modem
100 Base TX
506
Rear Passenger Phone Cradle
Phone
514
PNP
PNP
Bluetooth PDA
522
Proxy
(App Processor or Nav Computer?)
*Stub protocols for ODB services
*Gateway to external Internet services
*Centralized Network security Services
*Service discovery
4-port Ethernet Hub
802.11
512
Internet
Laptop DVD
Non-IP Router
Internet
OBD
LIS-A
Home/Work Internet (OSGI)
524
ACP
Internet 599

Figure 6

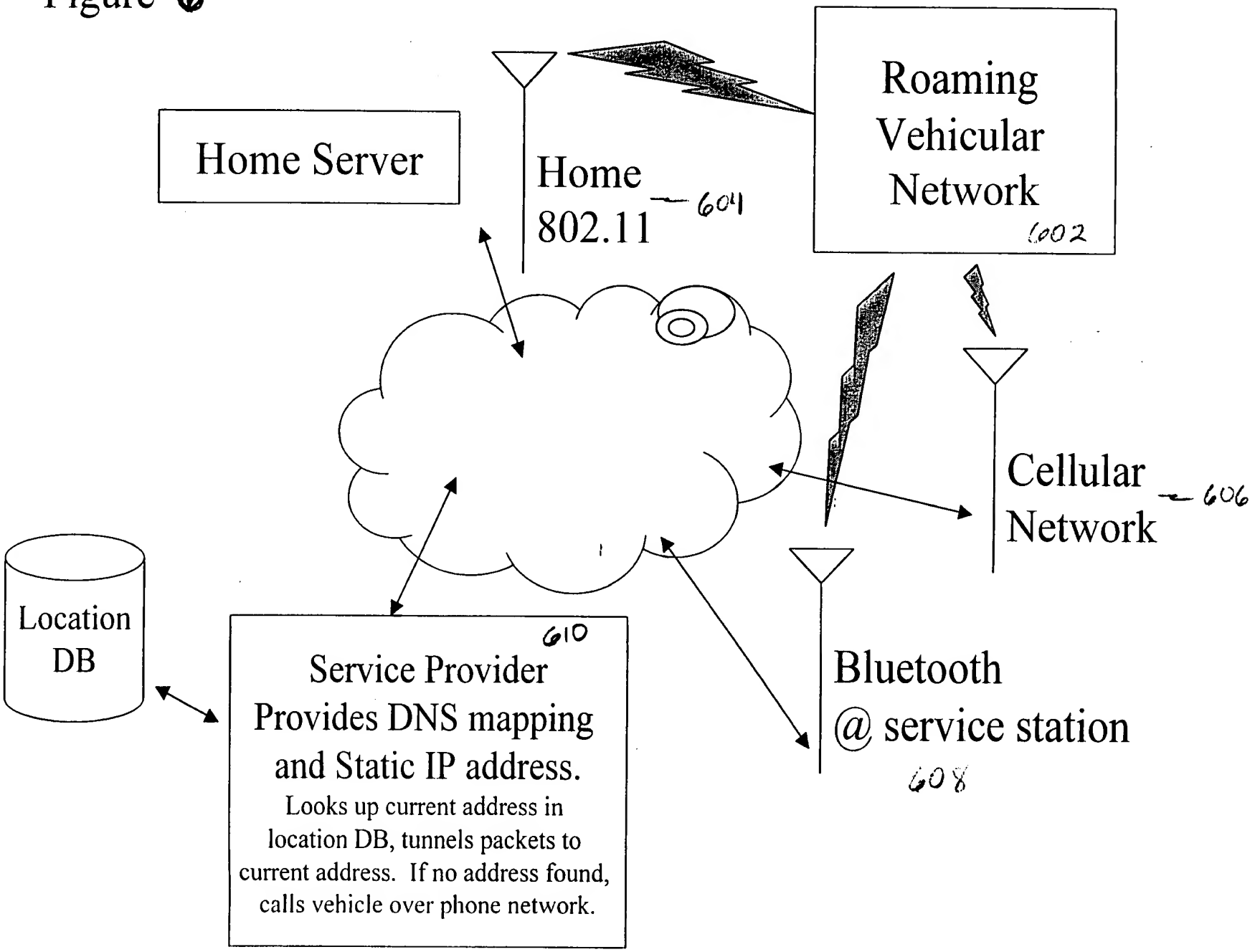

Home Server
Home 802.11
604
Roaming Vehicular Network
602
Cellular Network
606
Location DB
610
Service Provider Provides DNS mapping and Static IP address.
Looks up current address in location DB, tunnels packets to current address. If no address found, calls vehicle over phone network.
Bluetooth @ service station
608

Figure 7

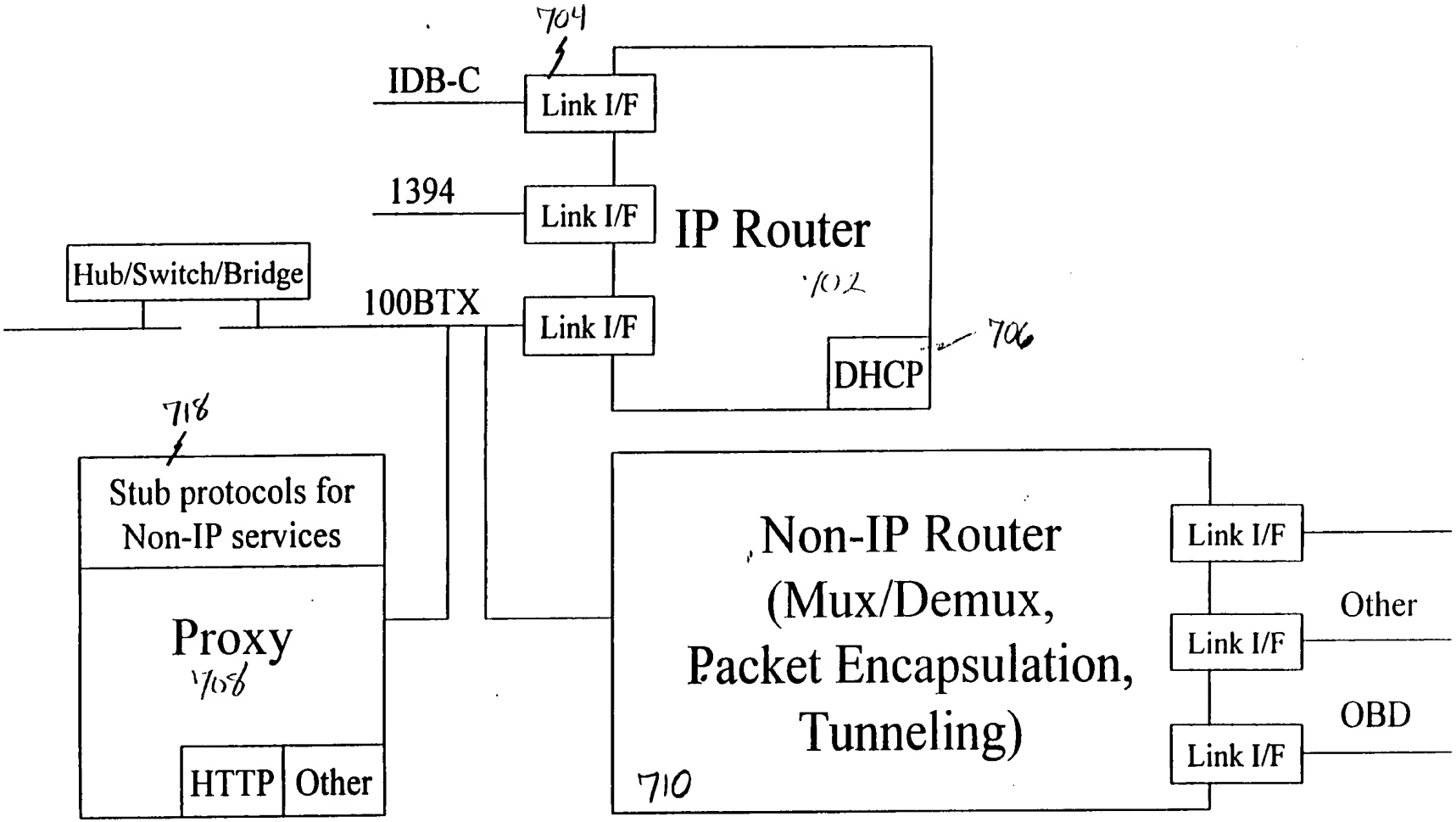

704
IDB-C
Link I/F
1394
Link I/F
IP Router
102
Hub/Switch/Bridge
100BTX
Link I/F
706
DHCP
718
Stub protocols for Non-IP services
Proxy
108
HTTP
Other
Non-IP Router (Mux/Demux, Packet Encapsulation, Tunneling)
710
Link I/F
Other
Link I/F
OBD
Link I/F

Figure 8

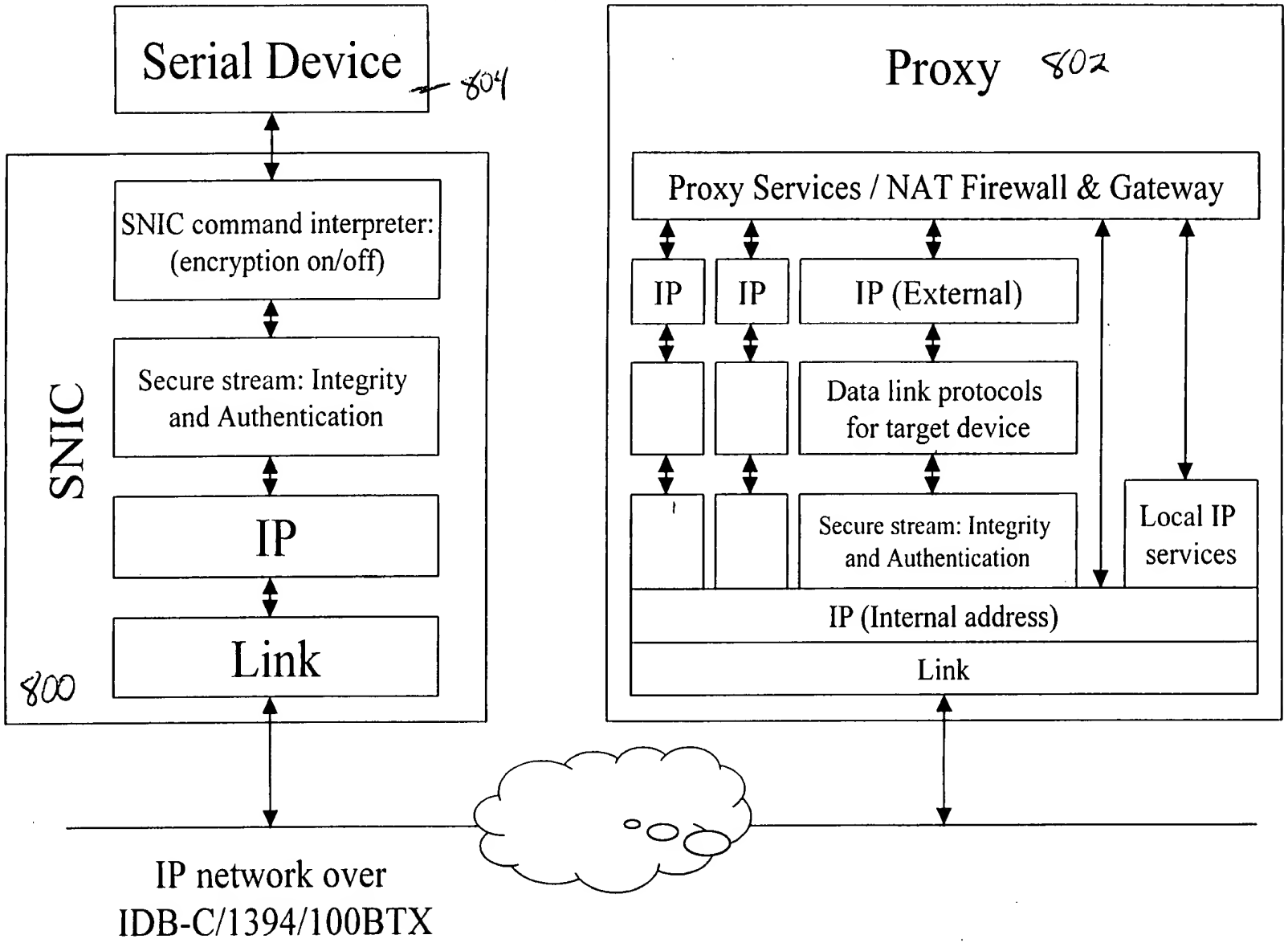
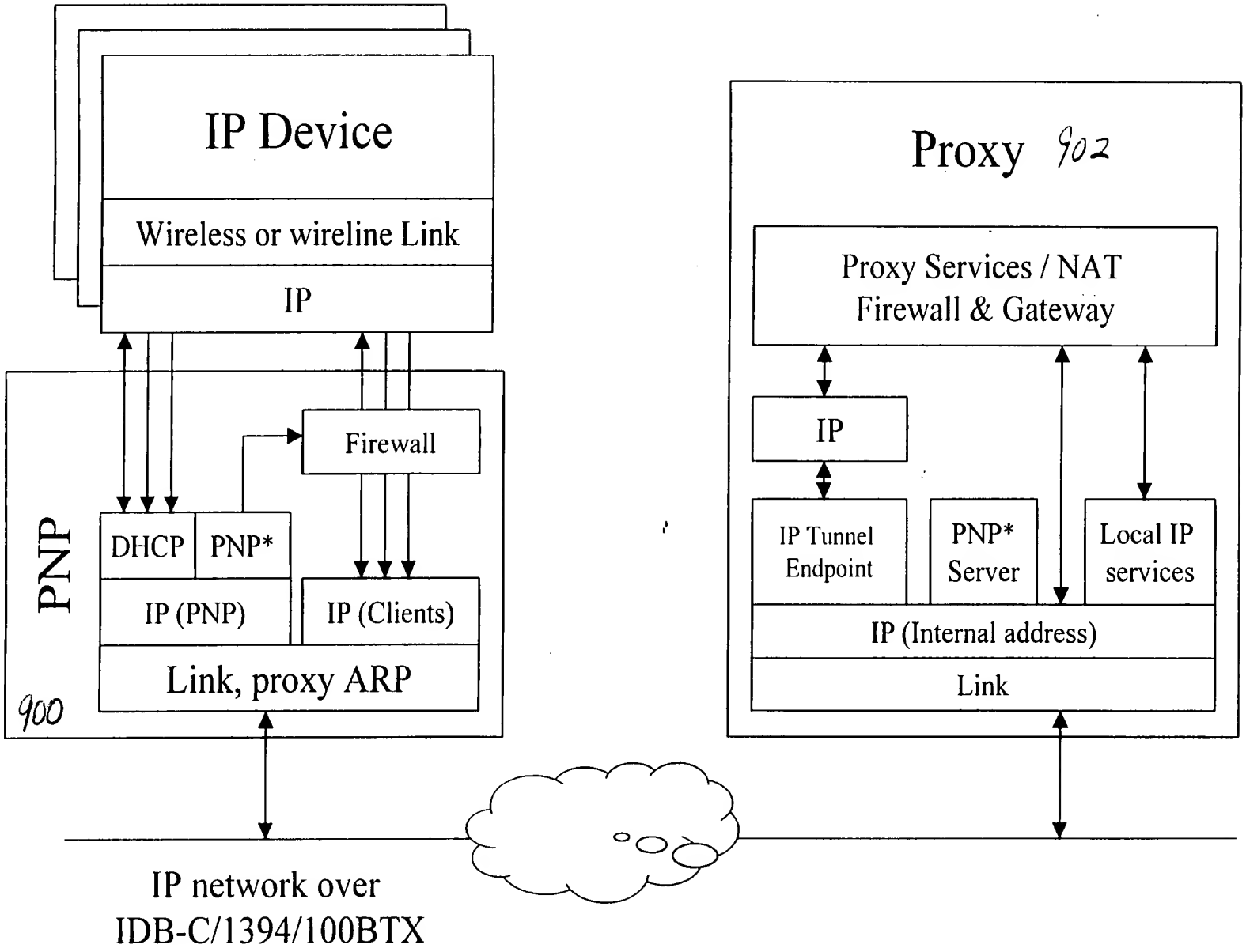

Serial Device
804
SNIC
SNIC command interpreter: (encryption on/off)
Secure stream: Integrity and Authentication
IP
Link
800
Proxy
802
Proxy Services / NAT Firewall & Gateway
IP
IP
IP (External)
Data link protocols for target device
Secure stream: Integrity and Authentication
Local IP services
IP (Internal address)
Link
IP network over
IDB-C/1394/100BTX

Figure 9


IP Device
Wireless or wireline Link
IP
PNP
DHCP
PNP*
IP (PNP)
Firewall
IP (Clients)
Link, proxy ARP
900
Proxy 902
Proxy Services / NAT
Firewall & Gateway
IP
IP Tunnel
Endpoint
PNP*
Server
Local IP
services
IP (Internal address)
Link
IP network over
IDB-C/1394/100BTX

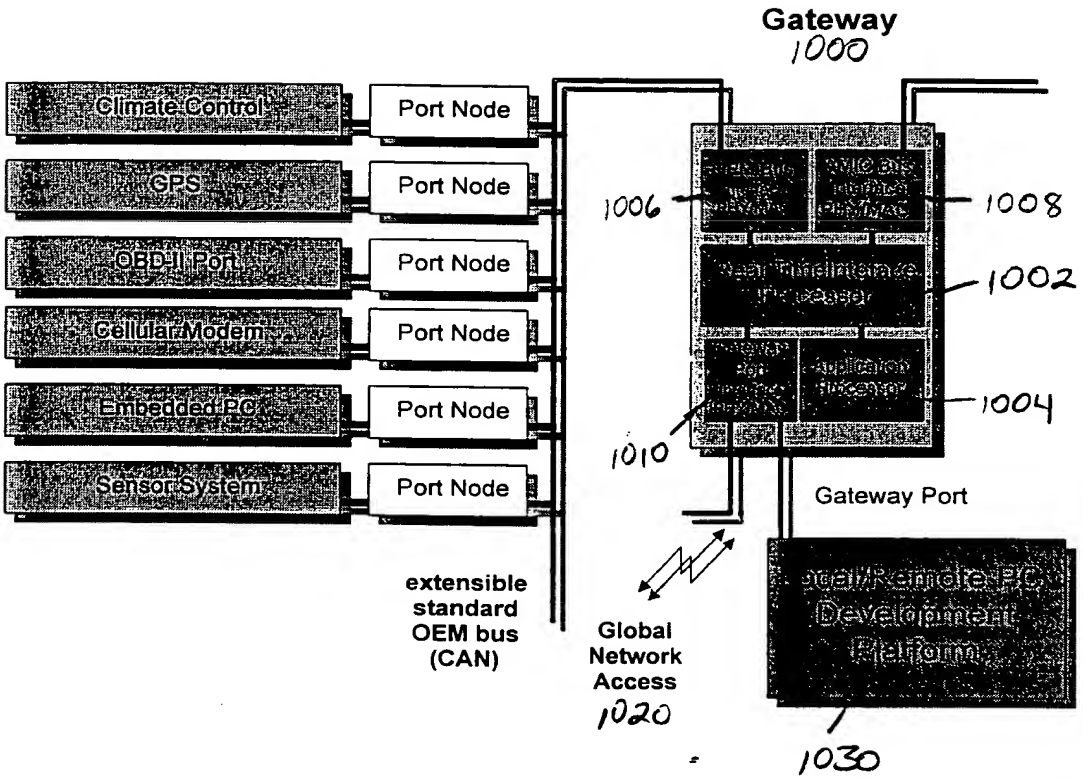

Gateway
1000
Climate Control
GPS
OBD-II Port
Cellular Modem
Embedded PC
Sensor System
Port Node
Port Node
Port Node
Port Node
Port Node
Port Node
1006
1008
1002
1004
1010
Gateway Port
extensible
standard
OEM bus
(CAN)
Global
Network
Access
1020
Development
Platform
1030

FIGURE 10

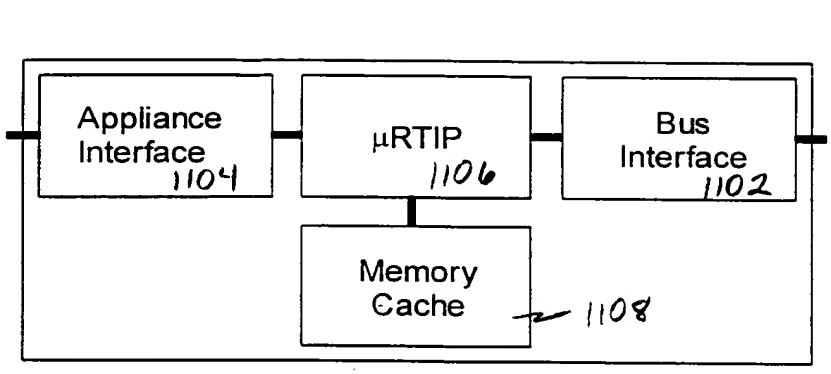

1100
Appliance Interface
1104
µRTIP
1106
Bus Interface
1102
Memory Cache
1108

FIGURE 11

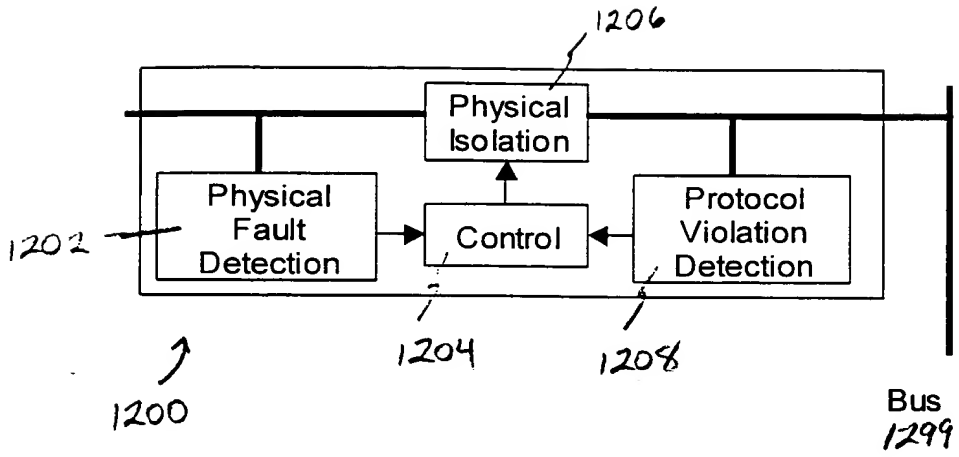

1206
Physical Isolation
Physical Fault Detection
Control
Protocol Violation Detection
1202
1204
1208
1200
Bus
1299

FIGURE 12

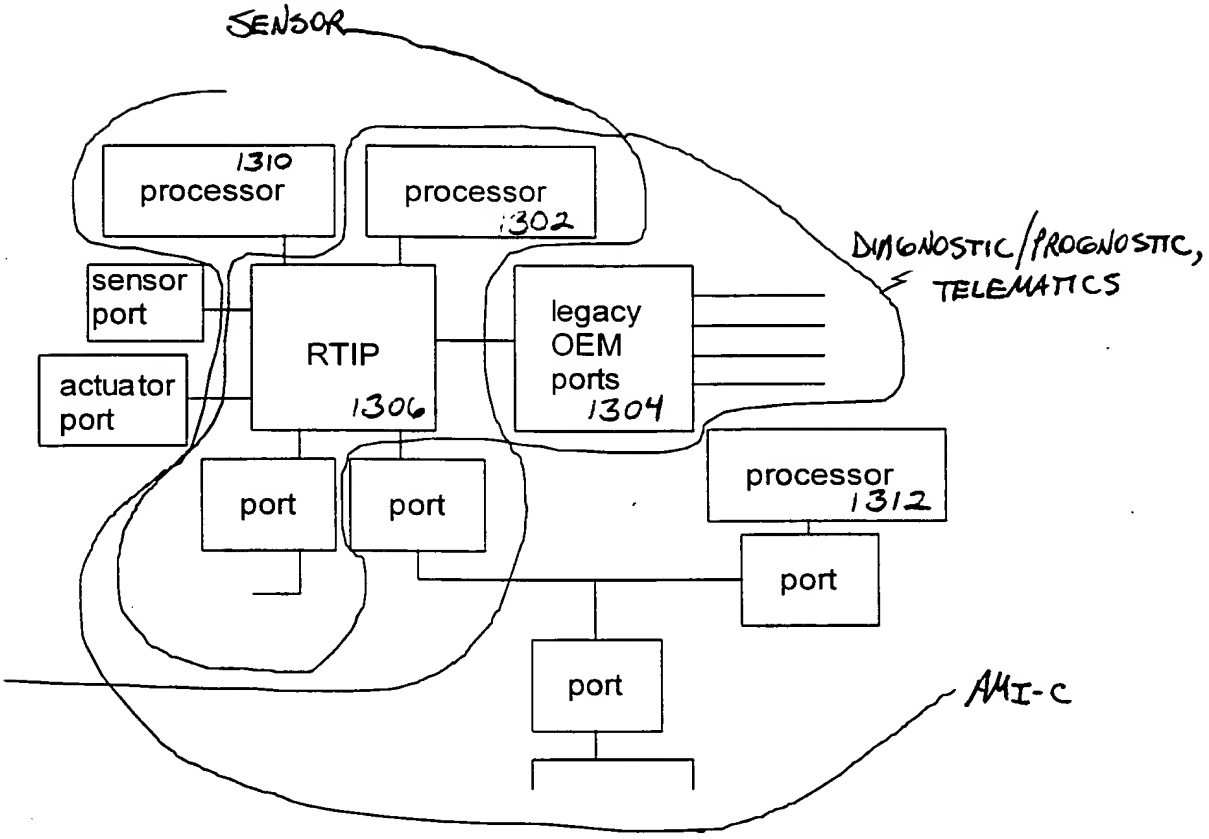

SENSOR
1310
processor
processor
1302
DIAGNOSTIC/PROGNOSTIC,
TELEMATICS
sensor
port
RTIP
1306
legacy
OEM
ports
1304
actuator
port
port
port
processor
1312
port
port
AMI-C

FIGURE 13

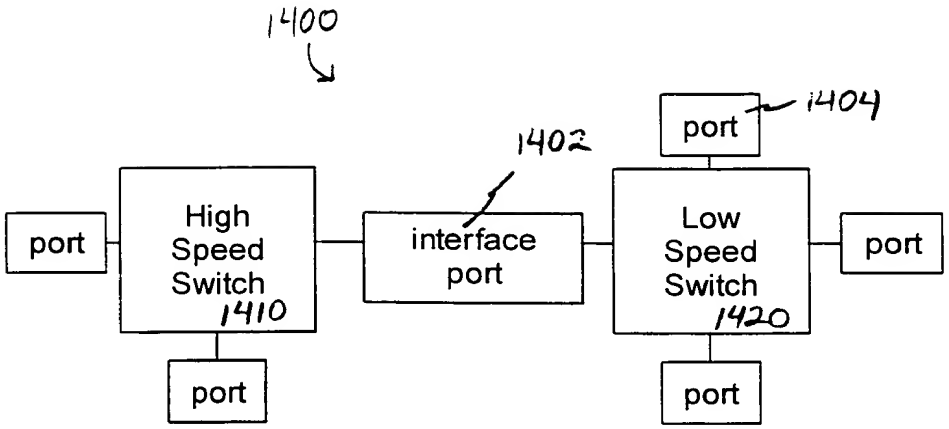

1400
port
1404
1402
High
Speed
Switch
1410
interface
port
Low
Speed
Switch
1420
port
port
port
port

FIGURE 14

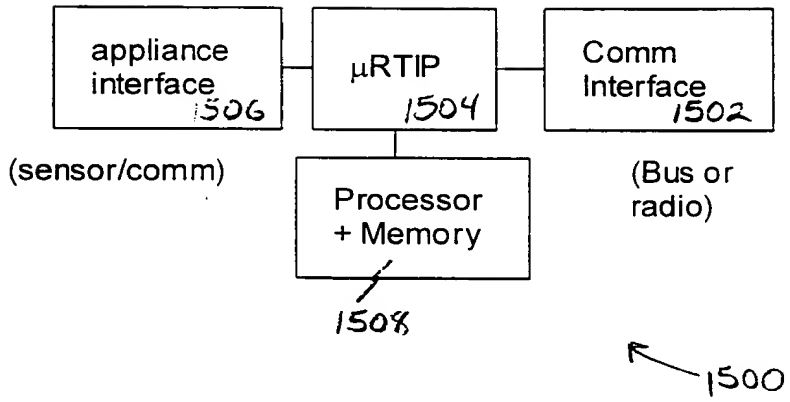

appliance interface
1506
μRTIP
1504
Comm Interface
1502
(sensor/comm)
Processor + Memory
1508
(Bus or radio)
1500

FIGURE 15

PATENT APPLICATION

1600

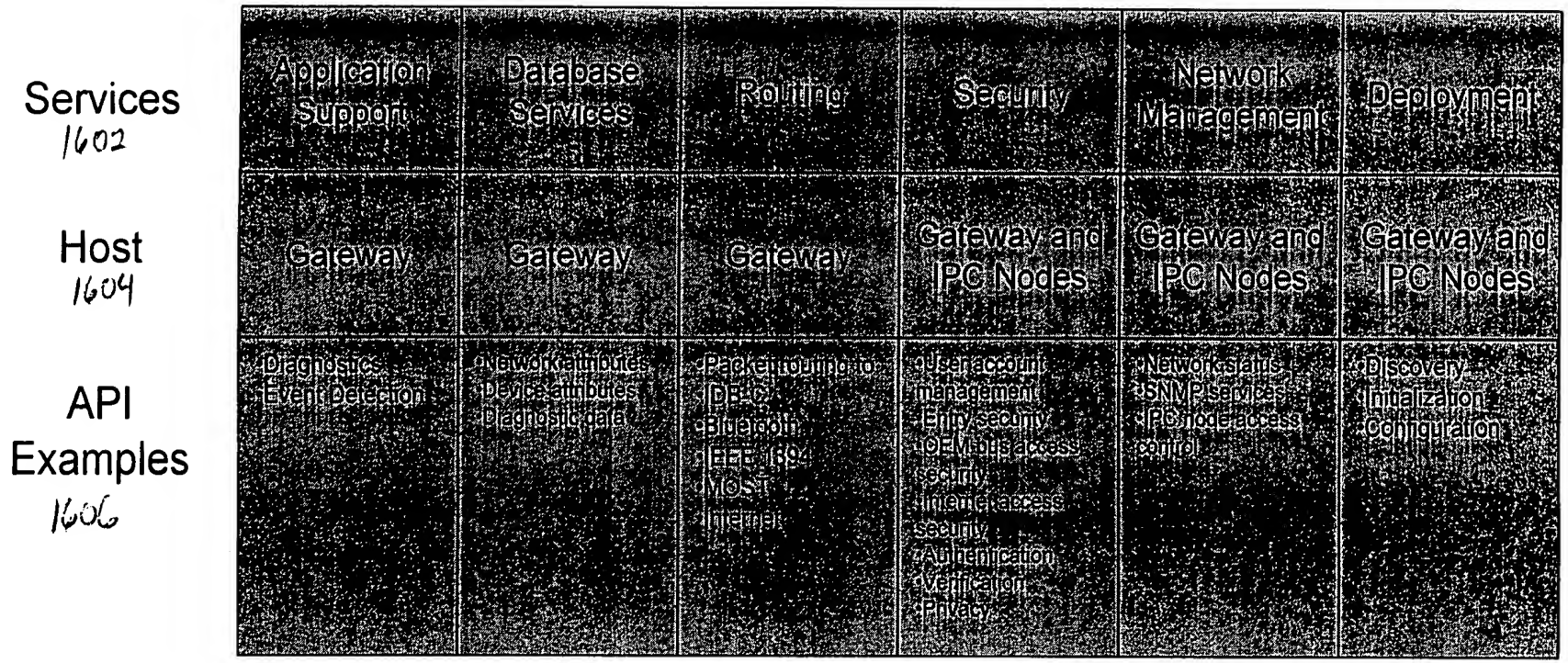


FIGURE 16

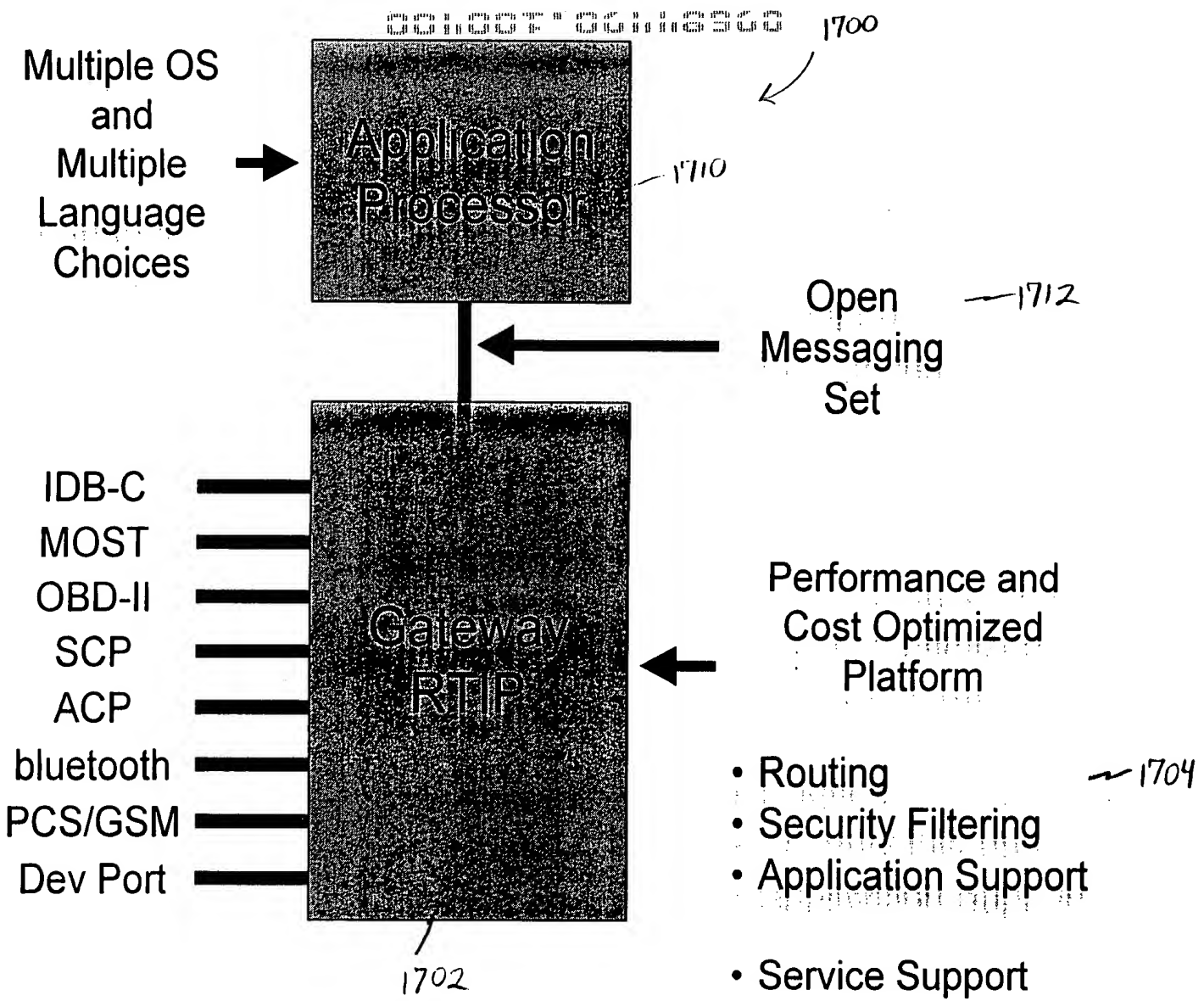

1700
Multiple OS and Multiple Language Choices
Application Processor
1710
Open Messaging Set
1712
IDB-C
MOST
OBD-II
SCP
ACP
bluetooth
PCS/GSM
Dev Port
Gateway RTIP
Performance and Cost Optimized Platform
• Routing
• Security Filtering
• Application Support
1704
• Service Support
• Java/Jini Support
1702

FIGURE 17

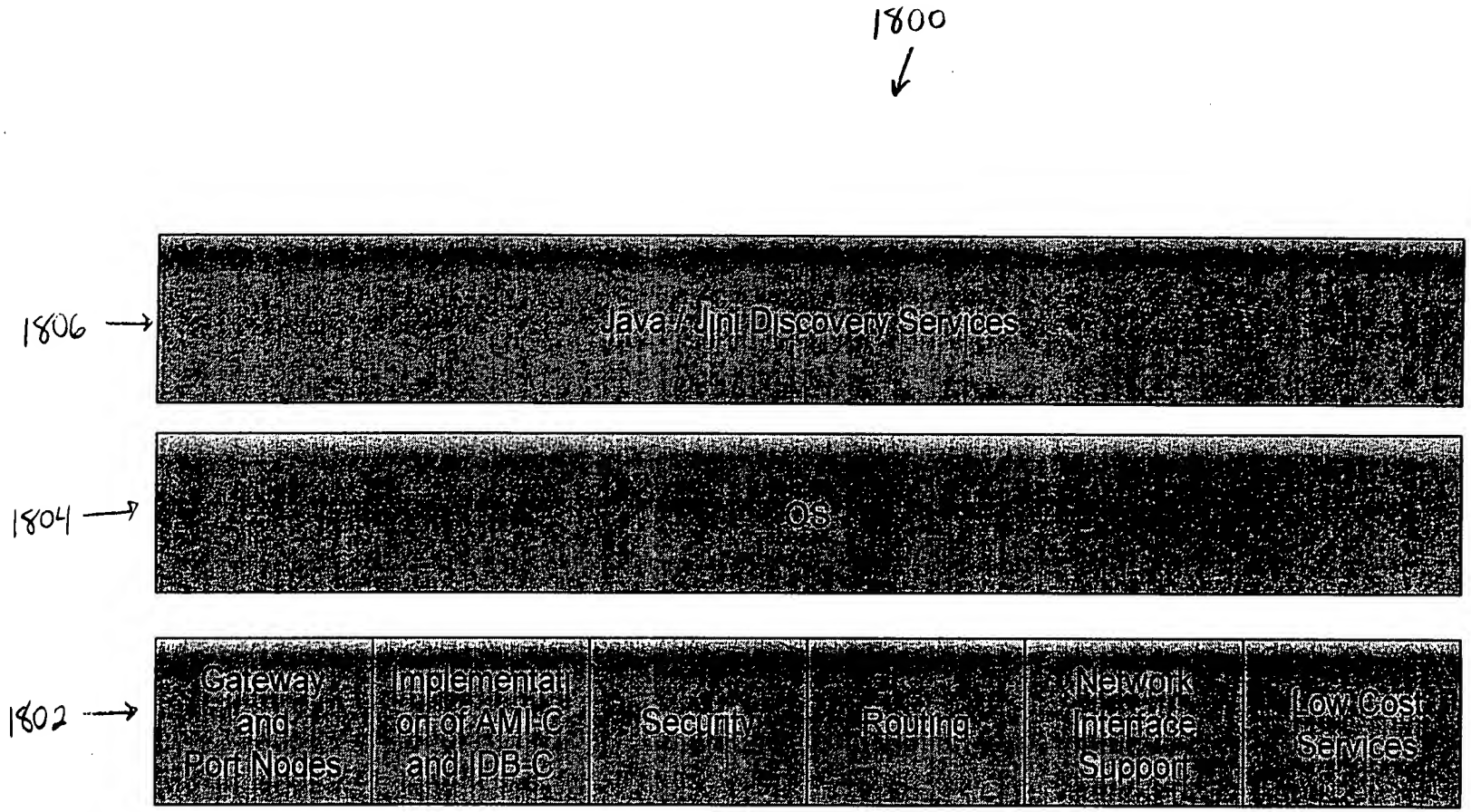

1800
1806
Java/Jini Discovery Services
1804
OS
1802
Gateway and Port Nodes
Implementation of AMI-C and IDB-C
Security
Routing
Network Interface Support
Low Cost Services

FIGURE 18

SUBSTITUTE SHEET (RULE 26)

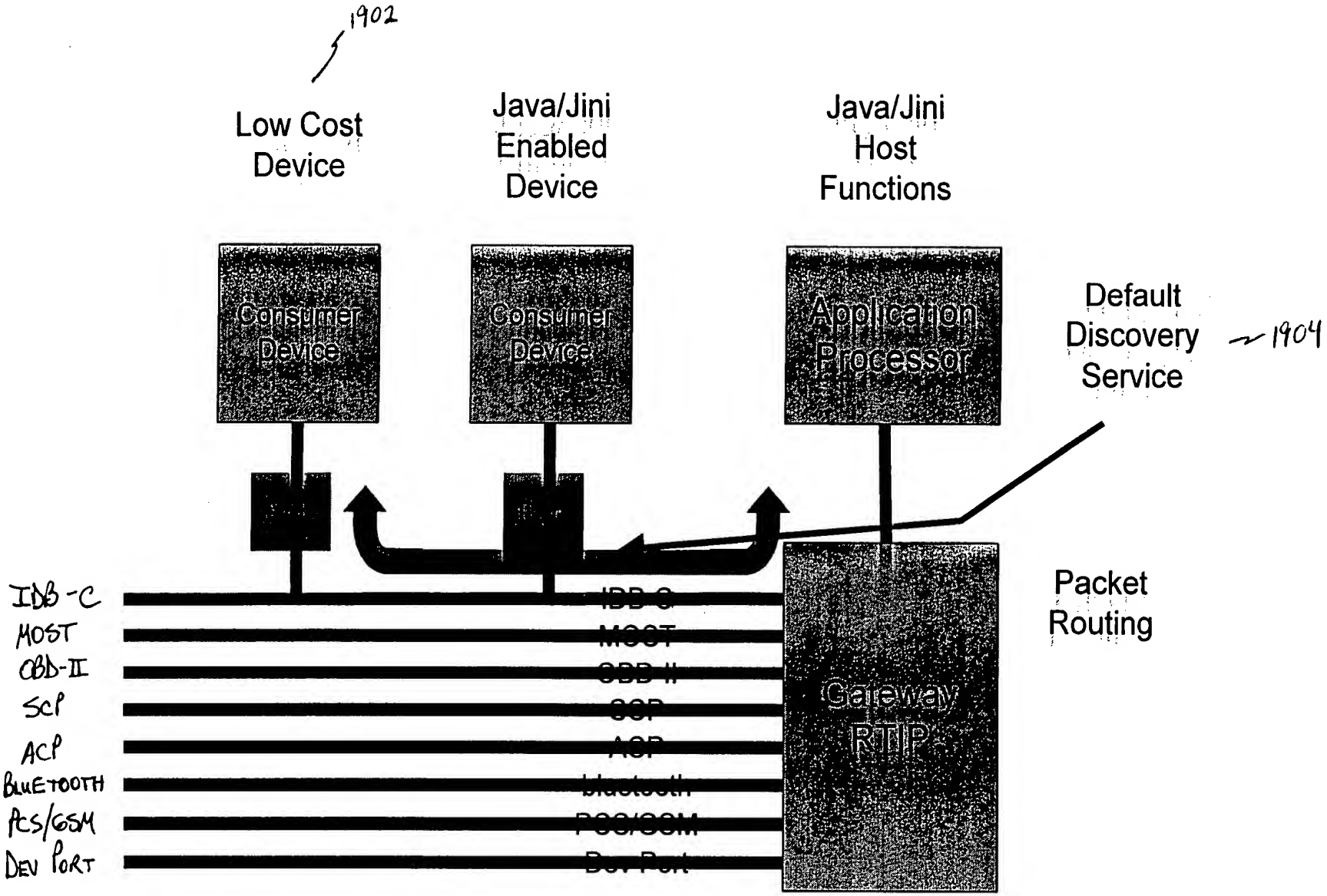


Figure 19

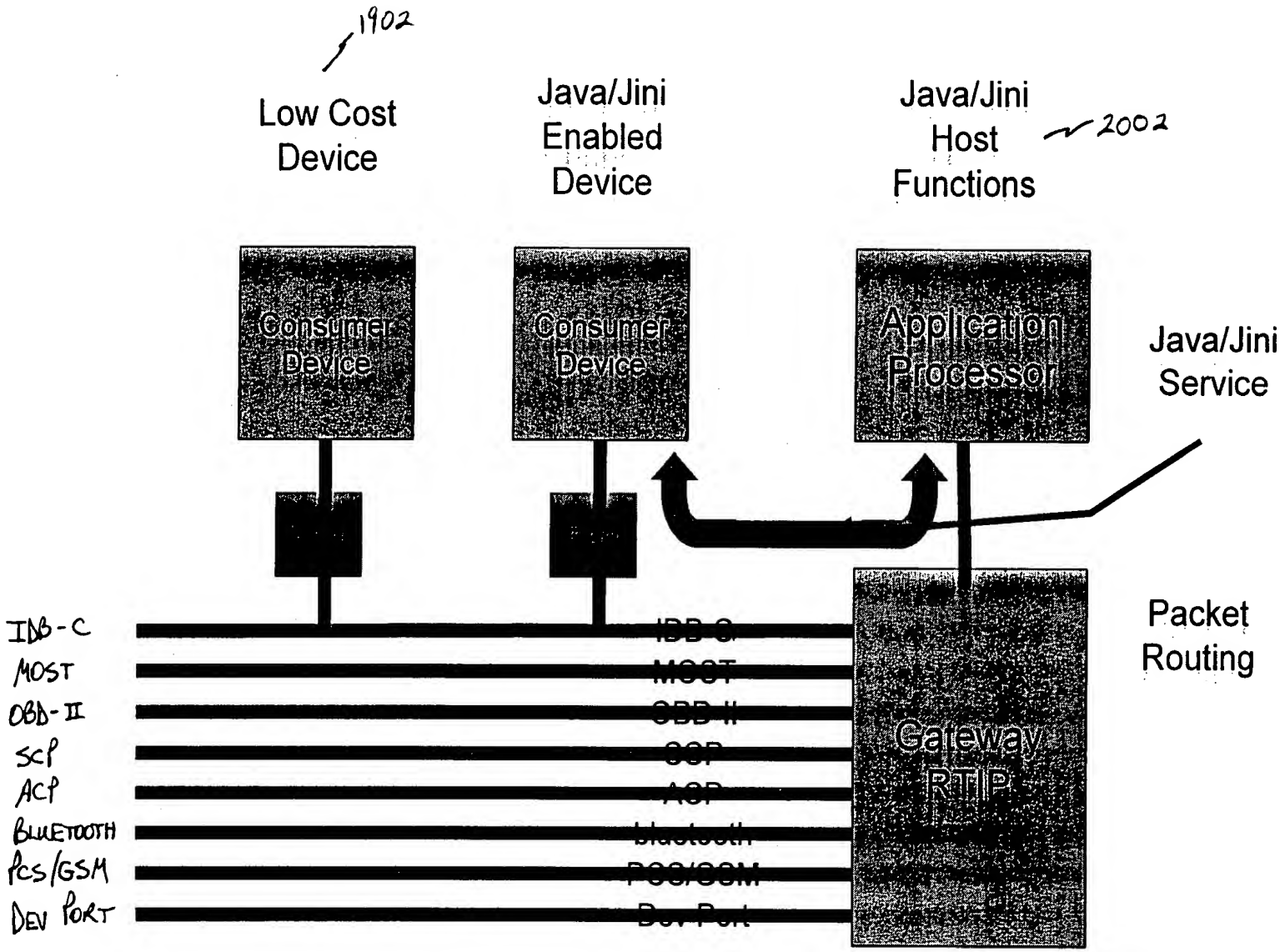

1902
Low Cost Device
Java/Jini Enabled Device
Java/Jini Host Functions
2002
Consumer Device
Consumer Device
Application Processor
Java/Jini Service
Packet Routing
Gateway RTIP
IDB-C
MOST
OBD-II
SCP
ACP
BLUETOOTH
PCS/GSM
DEV PORT

Figure 20

SUBSTITUTE SHEET (RULE 26)

2100

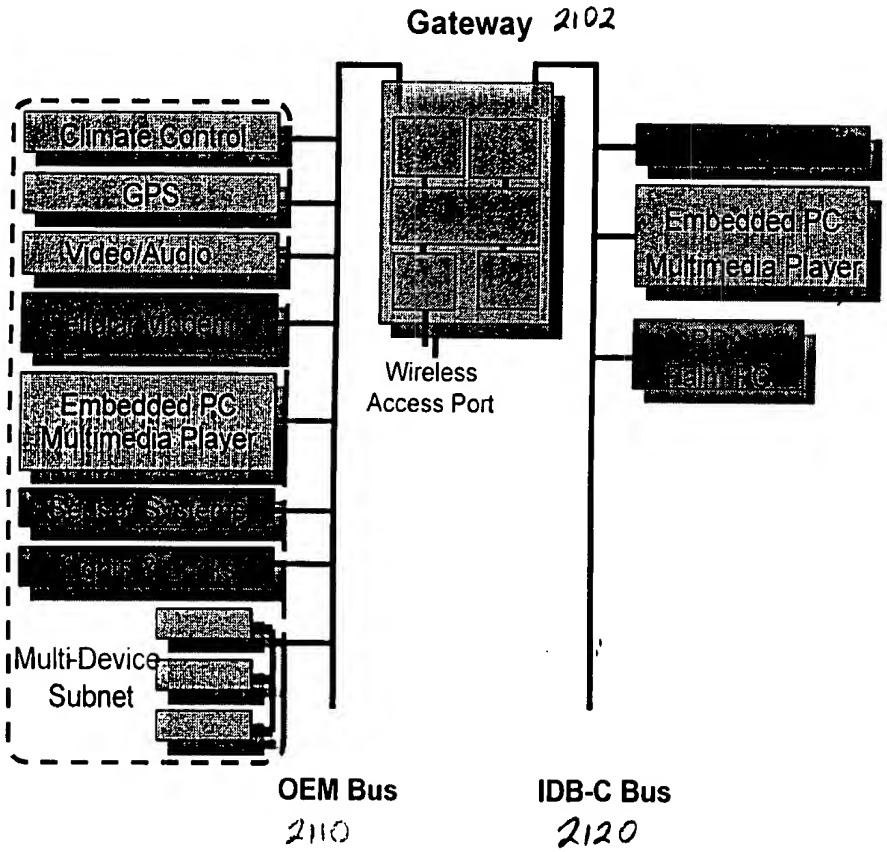


Figure 21

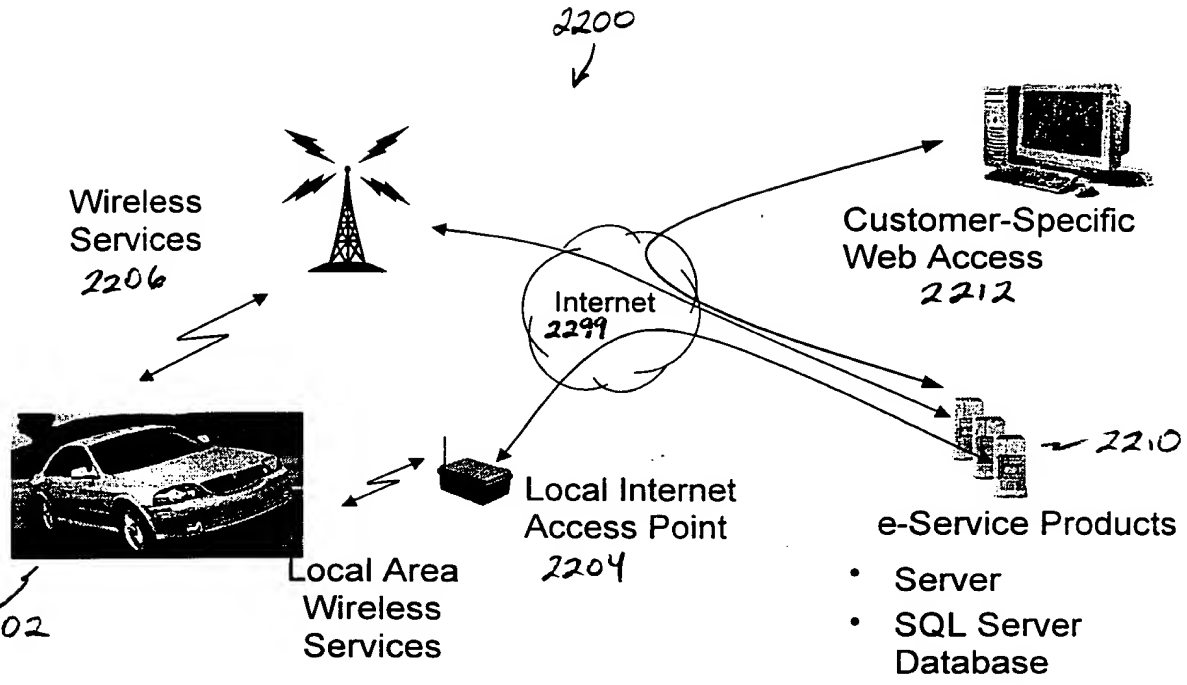

2200
Wireless
Services
2206
Internet
2299
Customer-Specific
Web Access
2212
2210
Local Internet
Access Point
2204
e-Service Products
• Server
• SQL Server
Database
2202
Local Area
Wireless
Services

FIGURE 22

Patent Application

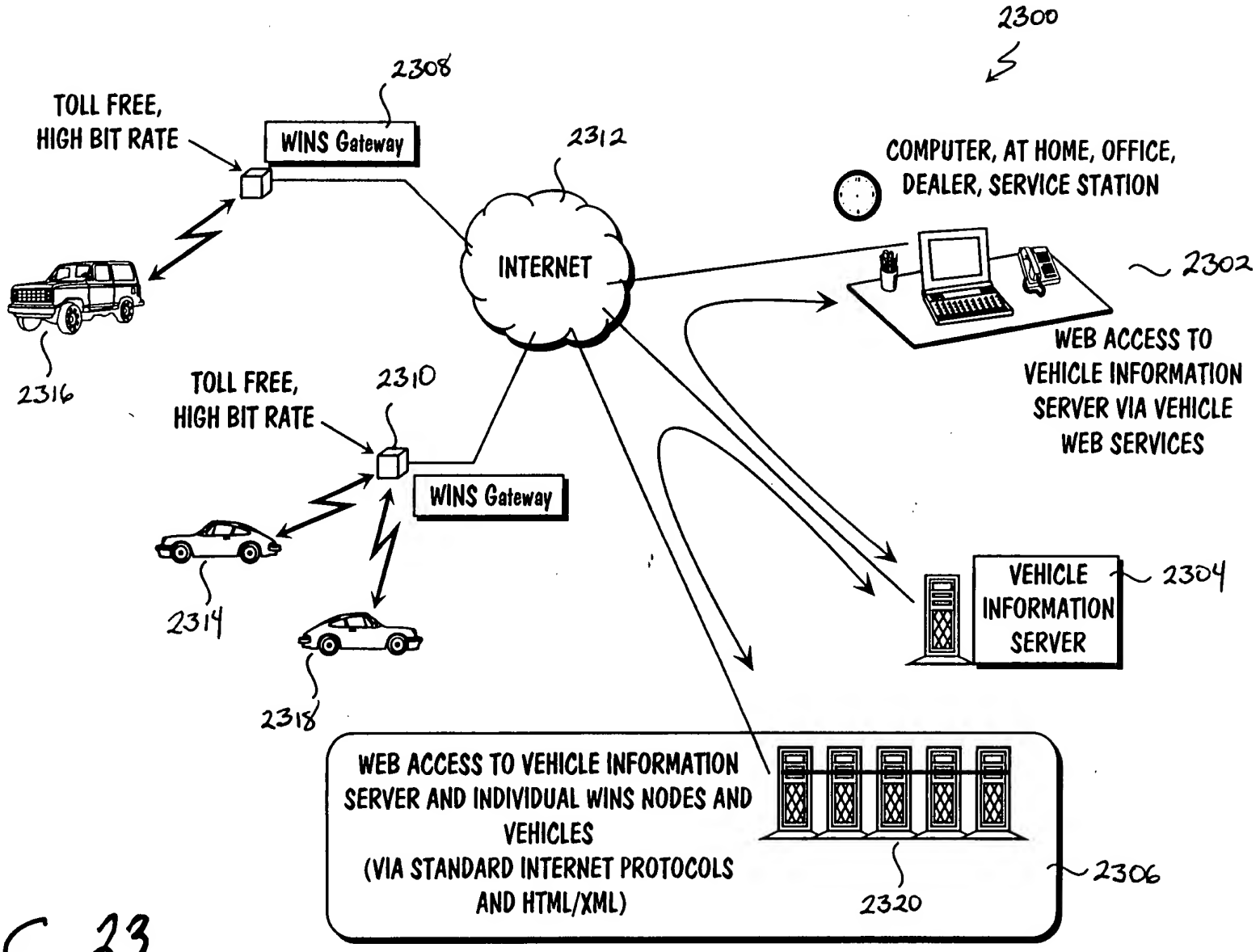


FIG. 23